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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SHOSHO, CALLIE E	

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/743,076	WAKABAYASHI, SHIGEMI	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/23/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. 5,990,202).

Nguyen et al. disclose ink comprising aqueous dispersion of colorant wherein the colorant comprises water-insoluble dye such as xanthene and polymer obtained from monomers including C_2-C_{40} alkyl (meth)acrylate, salt-forming monomer such as acrylic acid, and monomer copolymerizable with the alkyl (meth)acrylate and salt-forming monomer. The ink also comprises 10-25% co-solvent such as N-methylpyrrolidone or aliphatic alcohol, i.e. permeability controlling solvent (col.1, lines 10-14, col.3, lines 1-7 and 13-22, col.6, lines 12-50, col.8, lines 40-59, col.11, line 59-col.12, line 30, and col.15, lines 37-55).

In light of the above, it is clear that Nguyen et al. anticipate the present claims.

3. Claims 1-2 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Gore et al. (U.S. 2003/0055178) taken in view of the evidence given in Ishizuka et al. (U.S. 2002/0025994).

Gore et al. disclose ink comprising aqueous dispersion of colorant containing crosslinked polymeric nanoparticles obtained from monomers including C_{16}-C_{24} alkyl (meth)acrylate and dye wherein the dye is attached to or reacted with the polymeric nanoparticle (paragraphs 2, 8, 14, 16, 35, 38, 51, 66, 70, and 88). For further detail regarding the dye, Gore et al. refers to Ishizuka et al. which discloses the use of oil-soluble dye such as quinophthalone or phthalocyanine dyes (paragraphs 16-18).

In light of the above, it is clear that Gore et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (U.S. 5,990,202) or Gore et al. (U.S. 2003/0055178) either any of which in view of Zhu (U.S. 5,889,083).

The disclosures with respect to Nguyen et al. and Gore et al. in paragraphs 2-3 above are incorporated here by reference.

The difference between Nguyen et al. or Gore et al. and the present claimed invention is the requirement in the claims of acid number of the water-insoluble polymer.

Zhu, which is drawn to aqueous inks, disclose the use of polymer possessing acid number of 20-500 in order to fix colorant in the to substrate and to provide abrasion resistance (col.4, lines 47-54 and col.5, lines 1-7).

In light of the motivation for using polymer with specific acid number disclosed by Zhu as described above, it therefore would have been obvious to one of ordinary skill in the art to use polymer with such acid number, including that presently claimed, in Nguyen et al. or Gore et al. in order to produce ink that fixes colorant to substrate and has good abrasion resistance, and thereby arrive at the claimed invention.

6. Claims 1-3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (U.S. 5,990,202) in view of Sakakibara et al. (U.S. 2004/0132942).

Nguyen et al. disclose ink comprising aqueous dispersion of colorant wherein the colorant comprises water-insoluble dye such as xanthene and polymer obtained from monomers including C_2-C_{40} alkyl (meth)acrylate, salt-forming monomer such as acrylic acid, and monomer copolymerizable with the alkyl (meth)acrylate and salt-forming monomer. The ink also

comprises 10-25% co-solvent such as N-methylpyrrolidone or aliphatic alcohol, i.e. permeability controlling solvent (col.1, lines 10-14, col.3, lines 1-7 and 13-22, col.6, lines 12-50, col.8, lines 40-59, col.11, line 59-col.12, line 30, and col.15, lines 37-55).

While Nguyen et al. disclose that the polymer is obtained from C_2-C_{40} alkyl (meth)acrylate, there is no explicit disclosure utilizing polymer having alkyl group comprising at least 20 carbon atoms as presently claimed.

Sakakibara et al., which is drawn to ink composition, disclose the use of aqueous dispersion of water-insoluble vinyl polymer obtained from monomer having long chain C_{16}-C_{30} alkyl group. The motivation for using the monomer is to improve the storage stability of the ink (paragraphs 7-12 and 20-24).

In light of the motivation for using water-insoluble polymer obtained from monomer having alkyl group of at least 20 carbon atoms disclosed by Sakakibara et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use water-insoluble polymer obtained from such monomer in the ink of Nguyen et al. in order to produce ink with good storage stability, and thereby arrive at the claimed invention.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. in view of Chen et al. as applied to claims 1-3 and 5-6 above, and further in view of Zhu (U.S. 5,889,083).

The difference between Nguyen et al. in view of Sakakibara et al. and the present claimed invention is the requirement in the claims of acid number of the water-insoluble polymer.

Zhu, which is drawn to aqueous inks, disclose the use of polymer possessing acid number of 20-500 in order to fix colorant in the to substrate and to provide abrasion resistance (col.4, lines 47-54 and col.5, lines 1-7).

In light of the motivation for using polymer with specific acid number disclosed by Zhu as described above, it therefore would have been obvious to one of ordinary skill in the art to use polymer with acid number, including that presently claimed, in Nguyen et al. et al. in order to produce ink that fixes colorant to substrate and has abrasion resistance, and thereby arrive at the claimed invention.

8. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lau et al. (U.S. 2003/0149133) in view of Chen et al. (U.S. 6,764,173).

Lau et al. disclose ink containing dye and aqueous dispersion of polymeric binder wherein the binder is obtained from C_{12}-C_{40} alkyl (meth)acrylate such as behenyl (meth)acrylate or eicosyl (meth)acrylate, acid monomer, i.e. salt-forming monomer, and additional monomer copolymerizable with the alkyl (meth)acrylate and the acid monomer. The ink also contains humectant such as polyethylene glycol and/or 2-pyrrolidone in amount of, for instance, 15%, i.e. corresponding to permeability controlling solvent (paragraphs 1, 13, 15, 15, 34, 35, 38, and 45). Although there is no explicit disclosure of the acid number, given that the polymer of Lau et al. is made from 0-10% monomer which would affect the acid number of the polymer, i.e. polymer possesses few free acid groups, it is clear that the polymer would intrinsically possess acid number as presently claimed.

The difference between Lau et al. and the present claimed invention is the requirement in the claims of specific dye.

Chen et al., which is drawn to aqueous ink jet ink, disclose the use of water-insoluble dye such as phthalocyanine dye, quinophthalone dye, and xanthene dye (col.5, lines 22-52).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use water-insoluble dye such as phthalocyanine dye, quinophthalone dye, and xanthene dye in the ink of Lau et al. in order to produce ink with desired color, and thereby arrive at the claimed invention.

9. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1172421 in view of Sakakibara et al. (U.S. 2004/0132942).

EP 1172421 discloses ink comprises aqueous pigment dispersion of water-insoluble polymer comprising hydrophobic dye such as phthalocyanine dye (Solvent Blue 70), quinophthalone dye (Disperse Yellow 54, 64), and xanthene dye (Solvent Red 43) and water-insoluble polymer obtained from monomer having salt-forming group, macromer, copolymerizable monomer, hydroxyl group containing monomer and alkylene oxide group containing monomer. The ink also comprises solvent such as 2-pyrrolidone, polyethylene glycol, and isopropanol, i.e. permeability controlling solvent, in amount of approximately 20% (paragraphs 1, 54, 58-63, 67, 70-71, and 125). Although there is no explicit disclosure of the acid number for the polymer, given that the polymer is described as "water-insoluble" and thus possesses few free acid groups, it is clear that the polymer would intrinsically possess low acid number as presently claimed.

The difference between EP 1172421 and the present claimed invention is the requirement in the claims that the water-insoluble polymer have alkyl group of at least 20 carbon atoms in the side chain.

Sakakibara et al., which is drawn to ink composition, disclose the use of aqueous dispersion of water-insoluble vinyl polymer obtained from salt-forming group, macromer, copolymerizable monomer, alkylene oxide group containing monomer, as well as monomer having long chain C_{16}-C_{30} alkyl group. The motivation for using the monomer having long chain alkyl group is to improve the storage stability of the ink (paragraphs 7-12 and 20-24).

In light of the motivation for using water-insoluble polymer obtained from monomer having alkyl group of at least 20 carbon atoms disclosed by Sakakibara et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use water-insoluble polymer obtained from such monomer in the ink of EP 1174241 in order to produce ink with good storage stability, and thereby arrive at the claimed invention.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Johnson et al. (U.S. 6,743,875) disclose polymeric binder obtained from C_1-C_{50} alkyl(meth)acrylate.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
9/26/05